

VII.2 Fuel Cell Demonstration with On-site Generation of Hydrogen (New Project)*

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**Congressionally directed project*

Objectives

- Education and outreach
- Baseline demonstration of hydrogen fuel with zero emissions from source to sink
- Supplemental and backup electrical power for operational purposes
- Core facility for hydrogen-related research at North Carolina State University

Technical Barriers

This project addresses the following technical barriers from the Education section of the Hydrogen, Fuel Cells and Infrastructure Technologies Program Multi-Year Research, Development and Demonstration Plan:

- A. Lack of Awareness
- B. Lack of Demonstrations or Examples of Real-World Use
- C. Institutional Barriers and Access to Audiences

Approach

The demonstration will consist of

- On-site generation of hydrogen by electrolysis of water, powered by an existing photovoltaic system
- A stationary proton exchange membrane (PEM) fuel cell in an operational setting, to provide backup power and charging of electric vehicles
- A tabletop demonstration of electrolysis and fuel cells
- Education and outreach to schoolchildren, the general public, policy makers, trades people, and technology professionals